

REMARKS

Claims 1, 6, 8-10 and 13 have been amended. Claims 14-18 have been added. As a result, claims 1-18 currently remain pending in the instant patent application.

The drawings and the specification were objected to due to various informalities. Specifically, claim 8 was objected to for failing to show every feature of the invention specified in the claims, the specification was objected to because numeral 14 is not shown on the drawing and claim 5 is objected to and the Examiner suggests adding the legend of k in $Z_{offs}(k)$ and $\varphi_{offs}(k)$. Claim 8 has been amended to clarify the claimed subject matter, and is no longer limited to a data processor. Figure 1 has been amended to include the inadvertently omitted numeral 14. With respect to the claim 8 objection, the Examiner states “[I]t suggests adding the legend to k shown in $Z_{offs}(k)$ and $\varphi_{offs}(k)$.¹” The Examiner’s objection and the corrective action required by the Examiner are unclear. The Applicants respectfully request further clarification as to the precise nature of the Examiner’s objection to the claim language and the correction requested by the Examiner.

Claims 1-2, 4, 6-7 and 9-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over **Kojima** (U.S. Patent No. 5,579,338) in view of **Bunker** et al. (U.S. Patent No. 6,314,128 B1).

As indicated in the Background section of the instant patent application, a variety of prior art techniques have been employed to provide automatic frequency correction in communications systems, such as CDMA. *See* Patent Application, page 2, lines 27-29. One prior art technique is to perform frequency correction at the input to the receiver, where the receiver has the highest

sampling rate. *Id.* at page 2, lines 31-32. However, as noted, this technique demands a very high computation requirement. *Id.* at page 2, lines 32-34. An alternative prior art technique involves performing frequency error detection and correction after the signal has been de-spread, at the symbol level. *Id.* at page 2, line 34 – page 3, line 1. However, such a technique is limited in the range of frequency correction. *Id.* at page 4, lines 1-2.

The described and claimed invention overcomes one or more shortcomings of the prior art techniques by incorporating an automatic frequency control that measures an offset at one rate level (e.g., the symbol rate level) and implements a frequency correction at another rate level (e.g., the chip rate level). *See* Patent Application, page 7, lines 32-36. The pending claims are directed to this feature. For example, consider claim 6, which is directed to a spread spectrum communication system comprising a plurality of receivers for receiving transmitted signals. The receiver comprises an RF signal receiver for generating an analog signal from a received RF signal; an analog to digital converter for converting said analog signal into a code-spread digital signal; a digital signal despreader for processing the code-spread digital signal having a first data rate to obtain a despread digital signal having a second data rate, said second data rate being lower than said first data rate; and a frequency corrector, wherein said frequency corrector comprises a feedback loop including a frequency offset detector for obtaining a measure of a frequency offset from said despread digital signal and a frequency correction generator for generating a frequency correction and a combiner for combining said frequency correction with said code-spread digital signal to correct said frequency offset.

As indicated in claim 6, the digital signal despreader is adapted to process a digital code-spread signal to obtain a despread digital signal. Claim 6 further comprises a frequency corrector

that, among other things, includes a frequency correction generator for generating a frequency correction and a combiner for combining said frequency correction with said code-spread digital signal to correct said frequency offset. Thus, the frequency correction is combined with the code-spread digital signal to correct the frequency offset. Put another way, the frequency correction is combined with the code-spread signal, which is the input signal to the digital signal despreader and is subsequently despread by the digital signal despreader. In this manner, and as is shown in Figures 2 and 3 of the instant patent application, the frequency correction is implemented at, for example, the chip-set level.

The applied references, Kojima and Bunker, when taken alone or in combination, fail to teach at least the above described claimed feature, where the frequency correction is combined with the code-spread digital signal to correct the frequency offset. The Examiner asserts that elements 34, 36, 38 of Figures 5 and 9 of Kojima represent the digital signal despreader. Further, the Examiner asserts that the elements 10 and 12 of Figures 5 and 9 of Kojima represent the combiner. Thus, in Kojima, and as highlighted by the Examiner, the frequency offset is not combined with the code-spread digital signal (*i.e.*, to the signal provided to elements 34, 36, 38 of Figures 5 and 9, or, put another way, to the signal after the A/D 22, 24), but is rather added to the received SS signal. Thus, this claimed feature is missing from Kojima, as well as from Bunker. For at least this reason, the pending claims are allowable.

The pending claims are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of two or more of following references: **Kojima**, **Bunker**, and **Jagnow**. The Examiner asserts that Kojima fails to teach the RF signal receiver for generating an analog signal from a received RF signal and it also does not disclose performing the recited mathematical

operations. The Examiner asserts that these limitations are found in Bunker or Jagnow, and thus alleges that it would have been obvious for one skilled in the art to combine the teachings of these references to arrive at the claimed invention. Applicants submit that the Examiner fails to provide the requisite motivation to substantiate such alleged case of obviousness. The Examiner merely states that it would have been obvious to combine the act of generating an analog signal from a received RF signal or performing the recited mathematical operation to the teachings of Kojima. It is well-settled, however, that references must provide some motivation or reason for one of ordinary skill in the art to make the necessary changes in the disclosed devices or methods. The mere fact that references may be modified in the direction of the claimed invention does not make the modifications obvious unless the references expressly or impliedly teach or suggest the desirability of the modifications. *In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984); *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. App. 1985); *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ 351, 353 (Bd. App. 1984). Indeed, the Federal Circuit stated:

... To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction--an illogical and inappropriate process by which to determine patentability. *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). The invention must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art that existed at the time the invention was made. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985).

Sensonics Inc. v. Aerersonic Corp., 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

Applicants submit that the only motivation to modify Kojima's system as alleged by the Examiner is solely based upon Applicants' own disclosure. It is respectfully submitted that such

impermissible hindsight relied upon does not provide a proper basis for the obviousness alleged by the Examiner.

Because the Examiner has failed to provide the requisite motivation for such alleged obviousness, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness as required under 35 U.S.C 103(a). Accordingly, all of the pending claims are allowable over Kojima for at least these reasons.

Arguments with respect to other dependent claims have been noted. However, in view of the aforementioned arguments, these arguments are moot and therefore not specifically addressed. To the extent that characterizations of the prior art references or Applicants' claimed subject matter are not specifically addressed, it is to be understood that Applicants do not acquiesce to such characterization.

The newly added claims are allowable for one or more of the reasons presented above and for the additional features recited therein. For example, with respect to claims 14, 16, and 18, not of the applied references teach down-converting the digital code-spread signal to a lower rate.

In light of the arguments presented above, Applicants respectfully assert that claims 1-18 are allowable. In light of the arguments presented above, a Notice of Allowance is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance,
the undersigned attorney hereby requests an interview with the Examiner to discuss the steps
necessary for placing the application in condition for allowance.

Respectfully submitted,



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